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FCC Application: Identicom Lone Worker Protection Unit – GPRS Performance

RFI Job Reference 76894: SAR Testing

To whom it may concern

It is important to note that the Identicom Unit is not designed for continuous use and would only normally be operated when the user was at risk. However, the t777 unit being tested does transmit intermittent GPRS data as part of its tracking capability.

If the user enables this capability, the unit would typically seek a GPS fix every 5 minutes. The position for the unit is then transmitted via GPRS to the tracking software.

A specific feature of this device is that it only keeps the packet session open for the time taken to transmit the stored data, and then closes the packet session. It will then only re-establish the packet session at the next interval for uploading the stored log. The size of the log and all supporting message structure is usually around 60 bytes, which at a conservative transmission rate would take under a second to transmit, but allowing for server responses and network latency a figure of 2 seconds has been adopted.

If the tracking facility is enabled, on start-up, the unit takes an initial GPS fix which depending on environmental conditions and the location of the unit, can take up to 30 seconds. Once a fix is established, the unit sends the location to the monitoring software via a GPRS session which can take 2 seconds to connect and transmit, after which the GPRS transmission is ended and disconnected from the network.

After this, the unit will typically take a GPS fix every 5 minutes and again, connects and opens a packet data session, transmits in a 2 second period, again closing the session and terminating the connection once this is done. The shortest time the device is idle is 5 minutes although this can be extended. The idle time is used to preserve the battery (extend the standby time) of the product and additionally faster reporting rates are not required when locating humans who do not move at high speeds (as opposed to vehicle tracking applications). The typical time taken to open, transmit, and close the GPRS session for sending the stored data is under 2 seconds.

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To ensure that the time taken to attach and detach from the GSM network is considered the typical duration of 30 seconds is used. This therefore adds to the transmission time of 2 seconds to give a total transmission time of 32 seconds. This 32 seconds is viewed as a worst case for when the device has not remained registered on the network. The device normally remains registered on the GSM network after it has attached by re-registering with the network every 30 seconds to prevent the detach, then reverting to idle. This would then only require the GPRS session to be opened, which would typically take much less than the worst case 32 seconds.

The modes supported are:
GSM Voice using 1 slot and GPRS Class 10 using 2 slots. The device supports the following modes and functionality: Red Alert with tracking.

 The device power class for the device is: GPRS Class 10 supporting 2 uplinks.

Scale factor calculation:
GPRS Data –
- Source-Based Time-Average Duty Factor (GPRS mode): $32/(300) = 0.107 = 10.7$ %
- GPRS Class 10 operation is 2 out of 8 uplink slot = 0.25 = 25 %
- $(0.107)(0.25) =$ **0.02667 = 2.7** % maximum duty factor (GPRS)

If $P<60/f$ then SAR is not required:
- 60/f at 850 MHz: $60/0.85 = 70.6$ mW
- 60/f at 1900 MHz: $60/1.9 = 31.6$ mW

For this device with maximum duty factor applied:
GPRS850 / GPRS1900 **Data mode –**
- 850 MHz: 2 watts (0.02667) = 53.3 mW; below threshold, **SAR testing not required**
- 1900 MHz: 1 watts (0.02667) = 26.7 mW; below threshold, **SAR testing not required**

Voice mode SAR Testing has been conducted by RFI Global and the results are part of the test report provided by RFI Global.

Yours faithfully

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Operations Manager

Connexion2 Ltd